

### CLAIMS

1. A multipanel sliding door comprising at least two panels which are supported for travel in substantially parallel planes along runners, characterised in that a rack and wheelwork arrangement is provided for the movement of the door panels.
2. The multipanel sliding door of claim 1, characterised in that it is comprised of:
  - a door header F extending parallel to the door runners,
  - a set of  $n$  adjacent panels  $P = \{P_0, P_1, \dots, P_{n-1}\}$ , whereof a panel  $P_0$  is stationary and the remaining  $n-1$  panels  $P_1, P_2, \dots, P_{n-1}$  are supported for travel in planes substantially parallel thereto, the  $n$  panels  $P_0, P_1, \dots, P_{n-1}$  of set  $P$  having equal width  $L$ ,
  - a first set of  $n-2$  racks  $CF = \{CF_0, CF_1, \dots, CF_{n-3}\}$  which are fixedly supported by door header F, the length of racks  $CF_0, CF_1, \dots, CF_{n-3}$  of set  $CF$  being equal to  $L, 2L, \dots, (n-2)L$ , respectively,
  - a second set of  $n-2$  racks  $CP = \{CP_2, CP_3, \dots, CP_{n-1}\}$  which are attached to or formed unitarily with panels  $P_2, P_3, \dots, P_{n-1}$ , respectively, of set  $P$ , the length of racks  $CP_2, CP_3, \dots, CP_{n-1}$  of set  $CP$  being equal to  $L$ ,
  - a set of  $n-2$  wheelworks  $R = \{R_1, R_2, \dots, R_{n-2}\}$  which are rotatably mounted on  $n-2$  panels  $P_1, P_2, \dots, P_{n-2}$ ,

respectively, of set P and are designed to mesh together with first CF and second CP set of racks,

set R including:

- 5           - a wheelwork  $R_1$  formed of a single toothed wheel which is meshed together with rack  $CF_0$  of set CF and with rack  $CP_2$  of set CP, and
- 10          -  $n-3$  wheelworks  $R_2, R_3, \dots, R_{n-2}$  each formed of two coaxial and co-rotating toothed wheels, whereof a first larger diameter toothed wheel is meshed together with rack  $CF_1, CF_2, \dots, CF_{n-3}$ , respectively, of set CF and a second smaller diameter toothed wheel is meshed together with rack  $CP_3, CP_4, \dots, CP_{n-1}$  of set CP, wherein the ratio of the diameter  $D_k$  of the larger toothed wheel to the diameter  $d_k$  of the smaller toothed wheel of  $k$ -th wheelwork  $R_k$  is equal to  $k = 2, 3, \dots, n-2$ .

3. The multipanel sliding door of claim 1 characterised in that it is comprised of:

- 20          - a set of  $n$  adjacent panels  $P = \{P_0, P_1, \dots, P_{n-1}\}$ , whereof a panel  $P_0$  is stationary and the remaining  $n-1$  panels  $P_1, P_2, \dots, P_{n-1}$  are supported for travel in planes substantially parallel thereto, the  $n$  panels  $P_0, P_1, \dots, P_{n-1}$  of set P having equal width  $L$ , and  $n-2$  panels  $P_0, P_1, \dots, P_{n-3}$  of set P having an extension arm  $B_0, B_1, \dots, B_{n-3}$ , respectively, at

their top extending in the direction of travel of the panels,

- a first set of  $n-2$  racks  $CS = \{CS_0, CS_1, \dots, CS_{n-3}\}$  which are attached to or formed unitarily with extension arms  $B_0, B_1, \dots, B_{n-3}$ , of  $n-2$  panels  $P_0, P_1, \dots, P_{n-3}$ , respectively, of set P,
- a second set of  $n-2$  racks  $CD = \{CD_2, CD_3, \dots, CD_{n-1}\}$  which are attached to or formed unitarily with panels  $P_2, P_3, \dots, P_{n-1}$ , respectively, of set P,
- a set of  $n-2$  wheelworks  $R = \{R_1, R_2, \dots, R_{n-2}\}$  which are rotatably mounted on  $n-2$  panels  $P_1, P_2, \dots, P_{n-2}$ , respectively, of set P and are designed to mesh together with first CS and second CD set of racks.

4. The multipanel sliding door of claim 1, characterised in that it is comprised of:

- a set of  $n$  adjacent panels  $P = \{P_0, P_1, \dots, P_{n-1}\}$ , which are supported for travel in substantially parallel planes and have equal width  $L$ ,
- a first set of  $n-2$  racks  $CS = \{CS_0, CS_1, \dots, CS_{n-3}\}$  which are attached to or formed unitarily with  $n-2$  panels  $P_0, P_1, \dots, P_{n-3}$ , respectively, of set P,
- a second set of  $n-2$  racks  $CD = \{CD_2, CD_3, \dots, CD_{n-1}\}$  which are attached to or formed unitarily with  $n-2$  panels  $P_2, P_3, \dots, P_{n-1}$ , respectively, of set P,

- a set of  $n-2$  pairs of wheelworks  $R = \{(RS_1, RD_1), (RS_2, RD_2), \dots, (RS_{n-2}, RD_{n-2})\}$  which are rotatably mounted on  $n-2$  panels  $P_1, P_2, \dots, P_{n-1}$ , respectively, each pair of wheelworks  $(RS_1, RD_1), (RS_2, RD_2), \dots, (RS_{n-2}, RD_{n-2})$  including a first wheelwork  $RS_1, RS_2, \dots, RS_{n-2}$  designed to mesh together with rack  $CD_2, CD_3, \dots, CD_{n-1}$ , respectively, of second set of racks  $CD$  and a second wheelwork  $RD_1, RD_2, \dots, RD_{n-2}$  designed to mesh with rack  $CS_0, CS_1, \dots, CS_{n-3}$ , respectively, of first set of racks  $CS$ , the first and second wheelwork of each pair of wheelworks  $(RS_1, RD_1), (RS_2, RD_2), \dots, (RS_{n-2}, RD_{n-2})$  of set  $R$  being interlinked with one another by a transmission  $T_1, T_2, \dots, T_{n-2}$ , respectively, in order to rotate at the same rotational speed.

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